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Dale J. Gallenberg

South Dakota State University

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Wheat Scab

by Dr. Dale J. Gallenberg, *Extension plant pathologist*

Scab, also known as head blight, head scab or pink mold, is a fungal disease which can attack spring and winter wheat as well as other small grains. It is generally most serious under wet or humid weather conditions, such as that experienced in South Dakota and the upper Great Plains in 1993. Scab was observed in some winter wheat fields and was particularly severe in spring wheat and some barley fields.

The disease is most easily recognized in immature heads where one or more spikelets (or the entire head) appear prematurely ripened or bleached. Where the rachis is infected, all portions of the head above that point will be affected. The disease also can move down the head and infect the upper part of the stem as well. Fungal mycelium and spore masses (pink or orange) may be seen on or at the base of infected spikelets, along with small, dark fruiting bodies (perithecia). Infected spikelets generally are sterile or contain shriveled and/or discolored kernels.

Where disease pressure is high, significant yield losses (eg. 50 percent or more) may result from the floret sterility and poor grain fill.

Consider increasing the air flow on your combine during harvest to eliminate as much of this light scab-infected grain as possible.

Scabby grain can present major problems in marketing, storage, and utilization. *Grain from scab-infected fields may be less palatable to livestock than normal grain. It also may contain a mycotoxin (vomitoxin) which can induce vomiting, muscle spasms and other symptoms in humans and other non-ruminant animals.* Ruminant animals are much more tolerant to vomitoxin. This toxin apparently can remain stable in grain for several years. The FDA has established guidelines of 2 ppm vomitoxin in grain prior to milling, 1 ppm for finished flour products, and 4 ppm for animal feed.

Fusarium spp. are the causal agents in scab. *These fungi overwinter on crop residue* such as cornstalks, wheat stubble, and grass residue. Corn, in particular, is readily colonized by these fungi, and *scab can be quite*

severe where wheat follows corn in a rotation and the cornstalks are not plowed under. Spores produced on crop residue (conidia and ascospores) are blown by wind to wheat heads where germination and infection take place during warm, moist weather. Flower parts, glumes, and other portions of the spikes may be affected, and infections are most numerous and serious during anthesis. Rainy weather or sprinkler irrigation during this time period predisposes plants to the disease.

No highly resistant wheat varieties are currently available. Within maturity groups, some varieties are less frequently infected, apparently because of physical barriers to floret and spikelet infection. However, this variability exists only under conditions of light disease pressure. With heavy inoculum and appropriate weather, any variety can suffer significant damage. Differences in scab severity between varieties in the field are largely related to stage of plant development, specifically the time of anthesis, and prevailing weather at anthesis. Rainy weather during flowering of a particular variety may increase the level of scab relative to other varieties flowering earlier or later.

Crop rotation is important in scab control. Use of non-susceptible broadleaf crops is encouraged. *Burying crop residue is beneficial* in control of this disease, since fungal survival is greatest on surface residue.

Fungicide seed treatments (ex. Vitavax) can reduce seed and seedling problems resulting from the use of scab-infected seed but will not control head blight later in the season. If scab-infected seed must be used for planting, clean the seed thoroughly prior to fungicide treatment to eliminate as many of the light scab-infected seeds as possible. Do not use seed if germination and vigor are not sufficient.

At the present time, foliar fungicides are not an effective control for head scab. Some reduction may be observed when fungicides are used in a tan spot/septoria leaf blotch/leaf rust control program.

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